4.6 MARINE WATER AND SEDIMENT QUALITY AND OCEANOGRAPHY

4.6.1 Environmental Setting

This section examines the existing baseline conditions for marine water and sediment quality conditions along the proposed cable route and alternate landing sites [as determined pursuant to 14 CCR §15125(a) of the State CEQA Guidelines] that may be affected by the proposed Project.

Sea Route

The regional current patterns for the project area are described by Hickey (1979), and the dominant current patterns within the Monterey Bay are discussed in the EIS for designation of the Monterey Bay National Marine Sanctuary (NOAA 1992) and by Breaker and Broenkow (1994). Installation and use of the MARS cable and associated instrumentation are not expected to affect oceanographic conditions, i.e., currents and waves, along the cable route, although periods of extreme wind and/or sea conditions could limit or delay the cable installation process. Therefore, oceanographic conditions are not addressed in this section.

Water quality conditions within the MBNMS are discussed in NOAA (1992). Installation and use of the MARS system would not affect most water quality parameters, including temperature, salinity, dissolved oxygen, or nutrients, because the Project would not intentionally discharge any waste materials, and the cable system would consist of inert materials and is not expected to dissolve or leach chemicals that could alter the chemical properties of overlying waters. Therefore, these water quality conditions are not addressed in this section.

The proposed cable installation process, including the pre-installation grappling survey, would cause temporary resuspension of bottom sediments, producing short-term and localized increases in suspended sediment concentrations and turbidity levels in near-bottom waters. Thus, the following characterization of existing water quality conditions is focused on parameters related to resuspension of bottom sediments, as well as water quality and sediment quality impacts that could result from HDD at the landing site.

In general, water quality within the MBNMS is considered to be very good because of periodic upwelling and regular mixing with open ocean water masses that results in well-mixed, biologically productive, and well-oxygenated waters. Nearshore portions of Monterey Bay are affected by river and creek discharges and runoff. In particular, water quality near Moss Landing is affected locally by freshwater flow from the Salinas River, which drains an area of 4,156 square miles, and has a long term mean flow of 456 cubic feet per second (at Spreckels, approximately 20 km) upstream from Moss Landing Harbor). Agricultural drainage associated with River discharge has been a primary source of pesticide deposition in Monterey Bay (NOAA 1992).

Resuspension of bottom sediments occurs naturally in areas of the shelf when turbulence associated with currents or effects of surface waves exceed the threshold required for initiating motion of seabed materials, and/or mass movement of bottom sediments occurs in response to seismic events, turbidity currents, or excessive loading. Suspended sediments also occur in surface waters following storm events that result in discharges from coastal rivers. Currents may transport these river-derived sediments substantial distances alongshore or offshore from the origin.

Within shelf portions of the cable route, sediment resuspension events may be expected to produce suspended particle concentrations up to several tens of milligrams per liter. However, these concentrations would be expected to decrease rapidly following the resuspension event as the suspended particles settle and are re-deposited on the sea floor. The frequency and magnitude of these events are expected to be proportionately smaller in greater water depths due to the progressively weaker influence of turbulence associated with the passage of surface waves. At depths exceeding approximately 500 feet (152.4 m), the frequency of resuspension events is low and relatively uniform along different portions of the cable route.

Landing Areas

Concentrations of suspended particles in near-bottom waters in the vicinity of the landing sites are expected to vary from several tenths to tens of milligrams per liter. Temporal and spatial differences in suspended particle levels reflect variability in natural and human activities, such as wave and tidal current energies, discharges from the Salinas River and Elkhorn Slough, biological processes, sediment grain size patterns, and maintenance dredging within Moss Landing Harbor.

Historically, maintenance dredging of the Moss Landing Harbor has been conducted on a 3-year cycle, with dredged material disposed either at the SF-12 site (south of the cable route on the south side of Monterey Canyon) within Monterey Bay or along the shore at the South Sandspit Beach Disposal Site (USACE 2000). Generally, the sandy material from the outer channel areas has been deposited along the shore, and the siltier material from the inner harbor has been pumped offshore to the SF-12 disposal site.

Because the area off Moss Landing, and near the head of Monterey Canyon, represents such a dynamic environment, both topographically and hydrodynamically, there are numerous mechanisms that can affect the overall sediment transport regime in this region (Petruncio et al.1998). Some of these transport mechanisms are regular and recurring, e.g., tidal flow, littoral (alongshore) currents, etc., while others are seasonal and/or episodic, e.g., hyperpycnal flows, internal tides, storm events, slumps, slides, etc. Hyperpycnal flows refer to elevated water mass density, possibly due to high suspended solids loads. The major episodic events can have a far greater impact on the net transport patterns than the regular and recurring mechanisms (Xu et al. 2002; Garfield et al. 1994).

4.6.2 Regulatory Setting

Several general Federal and State statutes, summarized below, play important roles in protecting ocean and coastal waters.

Federal

Clean Water Act

The Federal Water Pollution Control Act and subsequent amendments, collectively known as the Clean Water Act (CWA) (33 USC § 1251 et seq.), were enacted by Congress to restore and maintain the chemical, physical, and biological integrity of U.S. waters. The CWA prohibits the discharge of oil or hazardous substances in Territorial Waters, i.e., out to 12 nm (22 km), in quantities harmful to public health or welfare or to the environment. The Act also created the National Pollutant Discharge Elimination System (NPDES) of permits that specifies minimum water quality standards for discharged wastewaters, requires states to establish standards specific to water bodies, and designates the types of pollutants to be regulated, including suspended solids and oils. Under the NPDES, all point sources that discharge directly into waterways are required to obtain a permit regulating their discharge. Each permit specifies effluent limitations for particular pollutants, and monitoring and reporting requirements for the proposed discharge.

As required by the CWA, the USEPA (1986) developed Water Quality Criteria, which establish numerical maximum concentration levels for contaminants in discharges to surface waters for the protection of both ecological and human health. The criteria, which apply to Territorial Waters, are not rules and they do not have regulatory effect; however, they can be used to develop regulatory requirements based on concentrations that will have an adverse impact on the qualities necessary for existing beneficial uses of U.S. waters.

Section 401 – Water Quality Certification. Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States, including discharges of dredged or fill material, must obtain certification from the state in which the discharge would originate. The Project's disposal of dredged material would require a Water Quality Certification by the Central Coast Regional Water Quality Control Board (CCRWQCB). This certification is required by USACE before a Section 404 permit can be issued (see below).

Section 402 – Permits for Stormwater Discharge. Section 402 of the CWA, administered by the RWQCB, regulates the discharge of pollutants to waters of the Unites States from any point source. This program regulates construction-related stormwater discharges to surface waters through USEPA's NPDES program. An NPDES permit is required for: (1) any proposed point source wastewater or stormwater discharge to surface waters from municipal areas with a population of 100,000 or more; and (2) construction activities disturbing 0.4 hectares (1 acre) or more of land. A stormwater pollution prevention plan (SWPPP) would be required for the Project pursuant to the general permit for construction-related discharges.

Section 404 – Permits for Fill Placement in Waters and Wetlands. Section 404 of the CWA prohibits discharges of dredged or fill material into jurisdictional "waters of the United States" without a permit issued by the USACE. "Waters of the United States" are broadly defined in USACE regulations (33 CFR §328.3) to include navigable waters, their tributaries, and adjacent wetlands. The USACE regulates, through the issuance of a Section 404 permit, the discharge of dredged or fill material in waters of the United States.

Rivers and Harbors Act

Permits are required from the USACE under Section 10 of the Rivers and Harbors Act (RHA) for all structures and/or work in or affecting navigable waters of the United States (§322.3[a]) (see 33 CFR §322.2[a] for the USACE's authority under Section 10, and 33 CFR §329.4 for the definition of navigable waters). Because the Project is in an area bisected by a navigation opening under the jurisdiction of the U.S. Coast Guard, Section 10 of the RHA would apply to the Project. An RHA permit would be required for this Project because it involves work in navigable waters. The USACE has the authority to combine all authorizations into one permit action; for example, the USACE would likely issue a comprehensive CWA Section 404/RHA Section 10 permit.

State

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act)

The Porter-Cologne Act (California Water Code § 13000 et seq.), which is the principal law governing water quality regulation in California, establishes a comprehensive program to protect water quality and the beneficial uses of State waters. The Act established the State Water Resources Control Board (SWRCB) and nine RWQCBs, which are charged with implementing its provisions and which have primary responsibility for protecting water quality in California. The Porter-Cologne Act also implements many provisions of the federal CWA, such as the NPDES permitting program. CWA § 401 gives the SWRCB the authority to review any proposed federally permitted or federally licensed activity which may impact water quality and to certify, condition, or deny the activity if it does not comply with State water quality standards. If the SWRCB imposes a condition on its certification, those conditions must be included in the federal permit or license.

California Ocean Plan

The California Ocean Plan (SWRCB 2001) establishes water quality objectives for California's ocean waters and provides the basis for regulation of wastes discharged into the State's ocean and coastal waters. The SWRCB prepares and adopts the Ocean Plan, which incorporates the State water quality standards that apply to all NPDES permits for discharges to ocean waters, and both the SWRCB and the six coastal RWQCBs implement and interpret the Ocean Plan. The Ocean Plan is not applicable to vessel wastes or the control of dredged material (Ocean Plan Introduction, Section C.2).

Basin Plan

The Central Coast Region of the RWQCB has established a Water Quality Control Plan (Basin Plan) for coastal waters. A water quality control plan for the waters of an area is defined as having three components: beneficial uses which are to be protected, water quality objectives which protect those uses, and an implementation plan which accomplishes those objectives (California Water Code [CWC] § 13050). The CCRWQCB's Basin Plan standards incorporate the applicable portions of the California Ocean Plan and are more specific to the beneficial uses of marine waters adjacent to the project site. The water quality objectives and toxic material limitations are designed to protect the beneficial uses of ocean waters, which are as follows:

- Water Contact Recreation (REC-1). Uses of water for recreational activities involving body contact for water, where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water skiing, skin and scuba diving, surfing, and fishing.
- Non-Contact Water Recreation (REC-2). Uses of water for recreational activities involving proximity to water but not normally involving body contact with water, where ingestion of water is not reasonably possible. These uses include, but are not limited to, picnicking, sunbathing, hiking, beachcombing, camping, boating, tide pool and marine life study, hunting, sightseeing, and aesthetic enjoyment in conjunction with the above activities.
- Industrial Service Supply (IND). Uses of water for industrial activities that do not depend primarily on water quality including, but not limited to, mining, cooling water supply, hydraulic conveyance, gravel washing, fire protection, or oil well repressurization.
- Navigation (NAV). Uses of water for shipping, travel, or other transportation by private, military, or commercial vessels.
- Marine Habitat (MAR). Uses of water that support marine ecosystems including, but not limited to, preservation or enhancement of marine habitats, vegetation such as kelp, fish, shellfish, or wildlife such as marine mammals and shorebirds.
- Shellfish Harvesting (SHELL). Uses of water that support habitats suitable for the collection of filter-feeding shellfish such as clams, oysters, and mussels, for human consumption, commercial, or sport purposes. This includes water that may have in the past or may in the future contain significant shellfisheries.
- Ocean Commercial and Sport Fishing (COMM). Uses of water for commercial or recreational collection of fish, shellfish, or other organisms including uses involving organisms intended for human consumption or bait purposes.
- Rare, Threatened, or Endangered Species (RARE). Uses of water that support habitats necessary at least in part for the survival and successful maintenance of plant or animal species established under state or federal laws as rare, threatened, or endangered.
- Wildlife Habitat (WILD). Uses of water that support terrestrial ecosystems including, but not limited to, preservation and enhancement of terrestrial habitats, vegetation, wildlife, e.g., mammals, birds, reptiles, amphibians, invertebrates, or wildlife water and food sources.

Along with the Ocean Plan provisions, the CCRWQCB Basin Plan specifies additional objectives applicable to all ocean waters, including: (1) the mean annual dissolved oxygen concentration shall not be less than 7.0 mg/L, nor shall the minimum dissolved oxygen concentration be reduced below 5.0 mg/L at any time; and (2) the pH value shall not be depressed below 7.0, nor raised above 8.5.

4.6.3 Significance Criteria

An impact on marine water and sediment quality and oceanography is considered significant if the Project results in any of the following:

- Effects on turbidity or suspended sediment concentrations are persistent and not reversed by natural dispersive processes over a short-term and temporary period (a few days) of sediment disturbance;
- Measurable changes in water quality extend beyond the cable corridors or seaward portals to a lateral distance equal to the local water depth;
- Release of visible indications of oil or grease, or spill petroleum products, e.g., diesel fuel or hydraulic fluid, that can cause toxicity, harm biological organisms, or degrade water quality;
- Physico-chemical changes that adversely impact marine ecosystems or are measurably different from ambient background conditions;
- Changes in water or sediment quality that cause deleterious effects in marine organisms;
- Alteration of local circulation to an extent that degrades marine waters or sediment quality or promotes erosion of the seafloor or other existing substrate; or
- The loss, e.g., frac-out, or spill of drilling muds that are subject to dispersal or transport in the vicinity of Elkhorn Slough.

4.6.4 Impact Analysis and Mitigation

Summary

The Project would have no significant impacts on marine water and sediment quality or oceanography; all impacts discussed below would be less than significant (Class III). The Project would not alter currents or wave patterns in a manner that would promote erosion of local beaches or cause shoaling of navigational channels within the project area. The Project would not alter natural mixing processes that could contribute to degradation of water quality or sediment quality or cause deleterious effects to marine organisms. Only the cable installation and recovery phases and repair operations would result in localized short-term changes to water quality. Once installed, use of the cable would not affect marine water quality along the cable route or landing areas, except in the event that the cable would have to be repaired and re-deployed (buried or surface-laid as appropriate).

Sea Route

Installation of the cable along the offshore portions of the sea route would require plowing a very narrow trench, placing the cable in the trench, and then burying the cable with adjacent sediments. This procedure would occur as a single operation or as separate operations, depending on the sediment conditions. Cable installation would be preceded by a one-time grapneling survey to clear obstructions on the sea floor.

Cable installation, grapnel surveys, and cable removal activities would resuspend bottom sediments and create a plume with elevated particle concentrations and increased turbidity levels compared to surrounding waters. The size of the plume and specific suspended particle concentrations within the plume would vary depending on the grain size of the bottom sediments, rates at which the suspended particles settle to the bottom or are dispersed by bottom currents, and the energy produced by the trenching equipment. Regardless, the plume diameter would not exceed tens of meters, and it would not be expected to affect adjacent areas at distances from the cable route greater than the water depths. Plume duration at any one location would be temporary, i.e., several hours, although plume formation and dissipation would occur simultaneously as long as the installation process continued (expected to last for up to 14 days; see Section 2). Turbidity also would be confined to near-bottom waters. Therefore, because the major portion of the cable route is several miles from shore and at depths greater than 500 feet (152.4 m), temporary and localized sediment resuspension would not result in persistent visual impacts or decreases in light availability to photosynthetic organisms. Cable repair or removal would cause localized and short-term water quality impacts, due to disturbances of bottom sediments, analogous to those associated with cable installation.

The surface-laying procedure for installation of the cable in hard bottom areas, and for installation of the science node and associated instruments, would also result in some resuspension of bottom sediments. The impact of the settling cable on the seafloor is expected to displace a relatively small volume of water, which would create localized turbulence sufficient to exceed the threshold for sediment resuspension, e.g., approximately 5 to 24 cm/sec. However, the force exerted by the cable is expected to decrease exponentially with distance, and not affect the bottom more than several cable diameters from the point of impact. The specific mass of sediment resuspended would depend in part on specific sediment characteristics, such as grain size, porosity, and cohesiveness. Based on video records of cable installation operations in soft bottom areas (personal communication, M. Harrison 1999), the impact of the cable on the bottom would be expected to create a plume of suspended sediments with a maximum radius of 10 to 20 cm. Turbulence induced by placing the cable on the bottom could generate a plume of suspended sediments, with a radius of less than 3.3 ft (1 m) centered over the cable, containing an average suspended sediment concentration of 10 mg/L. This concentration represents a 10-fold increase compared to expected background levels, and is comparable to suspended sediment concentrations that occur as a result of bottom trawl fishing. In addition, higher suspended sediment levels typically occur naturally close to shore due to the greater effects from wave-induced turbulence near the shoreline coupled with contributions of suspended particle discharges from coastal rivers, estuaries, and lagoons. Regardless, impacts would be temporary and likely smaller than changes associated with natural events, such as storms and runoff.

Installation and removal of the MARS cable and equipment, and operation of the MARS system, would not result in visible oil or grease or other physico-chemical changes that would impact the marine ecosystem. Indirect effects to water resources from the Project could result from accidental spills into or near open water of gasoline or other petroleum products, such as oil and hydraulic fluids, required for operation of the cable installation vessel and/or motorized equipment at the HDD site. Large spill volumes could degrade water quality, with the potential for toxicity and contaminant bioaccumulation in aquatic organisms. Large spills on land also have the potential for percolating into groundwater. These indirect impacts on water quality would be temporary and localized to the general vicinity of the spill. Impacts related to spills would be minimal because the contractor would be required to comply with cable laying vessel’s Spill Prevention Control and Countermeasure Plan and appropriate Best Management Practices (BMPs) addressing spill control measures.

Once installed, the buried cable would not result in any subsequent alterations in suspended sediment or turbidity levels. Similarly, the cable would not cause any long-term impacts on water quality, in part, because the cable components are inert and would not decompose into potentially toxic materials. Because the cable casing material is chemically inert, placement of the cable would not add contaminants to marine waters or sediments or result in physico-chemical changes that adversely impact marine ecosystems or are measurably different from ambient background conditions.

Landing Areas

Impacts on water quality in the nearshore zone are not expected because the cable would be installed by HDD from shore. This method of installation would avoid resuspension of bottom sediments and associated increases in turbidity that would otherwise occur with trenching. A drilling mud formulation, consisting of an inert clay material (bentonite), would be used for drilling all but the last 20 to 25 feet (6.1 to 7.6 m) of the conduit hole. Where possible, the last portion of the hole would be drilled using seawater as a lubricant. Other drilling fluid additives, used in response to specific downhole conditions encountered, would be EPA approved. Where hard rock is being drilled, this may not be possible, in which case drilling would continue at reduced rate and pressure, with great attention being paid to the operation up to the break through at the seabed. Spent drilling muds and solids (cuttings) would be collected by an integrated solids control system and disposed at an approved landfill. However, given the variety of geologic conditions expected, it is possible that some of the drilling fluids would be lost in fractures within the formation. In cases where the fracture is lateral and subterranean, lost fluids would never surface. In other cases, drilling fluids may reach the surface, e.g., the fracture comes close enough to the surface that the pressure causes the release of drilling fluid above ground.

The potential for significant losses of drilling fluids to the environment would be minimized through several measures that are described in Section 2.2.6, Section 2.4, and Appendix H. Prior to drilling, the geological characteristics of the formation will be evaluated so that the most appropriate route for the conduit installation can be determined. During drilling, the potential for losing drilling fluids to the formation would be assessed by monitoring returns of the drilling fluid to the entry point or changes in the pressure of the drilling fluid. If a loss of fluid volume or pressure is detected, drilling may be stopped or slowed to allow close observation for a surface release in the ocean. If a release is discovered, the driller would take measures to reduce the quantity of fluid released by lowering drilling fluid pressures and/or thickening the drilling fluid. However, both would depend on geologic conditions. Any surface releases above the high tide line would be contained with sand bags and collected for reuse or disposal. For releases below the high tide mark, containment and collection is impractical; thus, some drilling fluids would dissipate in the sea water. The amount of bentonite drilling fluids that could be released during HDD is difficult to determine. Based on a worst-case fluid/soil mix of 2:1 and a 5,000-foot-long, 4-inch-diameter bore, up to 520 kilograms of bentonite could be lost to a fracture.

Bentonite (sodium montmorillinite) is a natural clay that is a major ingredient of most water-based drilling muds used for offshore oil and gas development drilling operations

(Neff 1987). It is considered inert and non-toxic, and has been approved for use by EPA. Bentonite may contain elevated, i.e., relative to natural marine sediments, concentrations of barium and other metals that are present as trace impurities in the clay. However, these metals are in the form of insoluble salts and, therefore, do not readily dissolve in seawater and are not biologically available. The acute toxicity of bentonite is very low (96-hour LC_{50} greater than 7,000 mg/L; Neff 1987). However, at high concentrations bentonite can cause some impacts on organisms by physical abrasion or clogging.

Impacts on water quality, e.g., elevated suspended particle concentrations, are not expected to persist for more than a few hours, because any drilling fluids released to the marine environment through subsurface fractures during HDD would likely be dispersed rapidly by currents and wave-induced turbulence. Studies conducted at offshore oil platforms indicate that drilling fluid discharge plumes are diluted to background concentrations within 0.1 to 4 hours (Neff 1987). In addition, bentonite releases would not be expected to cause significant increases in trace contaminants, such as metals, in seawater because the material is largely insoluble and unreactive.

Impact MAR-1: Resuspension of Bottom Sediments

Cable installation, removal, and repair operations would resuspend bottom sediments near the cable route. (Class III)

The effects from cable installation and removal on turbidity or suspended sediment concentrations would not be persistent because the effects will be reversed by natural dispersive processes within a few days of sediment disturbance. Measurable changes in water quality will not extend beyond the cable corridors or seaward portals to a lateral distance equal to the local water depth. Temporary increases in suspended sediment concentrations and turbidity levels are not expected to cause deleterious effects in marine organisms. Impacts on water quality in the vicinity of the proposed cable route would be adverse but not significant (Class III).

Impact MAR-2: HDD Effects on Nearshore Water and Sediment Quality

HDD operations would degrade nearshore water and sediment quality. (Class III)

The Project description contains several measures that would prevent significant degradation of water and sediment quality as a result of HDD operations; these are:

- Plastic barriers will be placed underneath drilling equipment and oil absorbent blanks will be placed around hydraulic components of drill rig to prevent leaks/spills of fuels and hydraulic fluids in site soils;
- Silt curtains and hale bales will be placed around the drilling site to prevent offsite runoff of contaminated stormwater or spilled drilling fluids; and
- After HDD operations are completed, the site will be returned to its original condition.

As described above, any drilling fluids released to the marine environment through subsurface fractures during HDD would likely be dispersed rapidly by currents and wave-induced turbulence. Studies conducted at offshore oil platforms indicate that drilling fluid discharge plumes are diluted to background concentrations within 0.1 to 4 hours (Neff 1987). Thus, impacts on water quality, e.g., elevated suspended particle concentrations, are not expected to persist for more than a few hours. Bentonite releases would not be expected to cause significant increases in trace contaminants, such as metals, in seawater because the material is largely insoluble and unreactive. Consequently, neither significant impacts related to acute toxicity nor the increased potential for contaminant bioaccumulation by exposed organisms are expected. Thus, this impact would be adverse but not significant (Class III).

Impact MAR-3: Degradation of Water Quality from Fuel Spills

Fuel or hydraulic fluid spills from cable installation vessels would degrade water quality. (Class III)

Indirect effects to water resources from the Project could result from accidental spills into or near open water of gasoline or other petroleum products, such as oil and hydraulic fluids, required for operation of the cable installation vessel and/or motorized equipment at the HDD site. Large spill volumes could degrade water quality, with the potential for toxicity and contaminant bioaccumulation in aquatic organisms. Large spills on land also have the potential for percolating into groundwater. These indirect impacts on water quality would be temporary and localized to the general vicinity of the spill. The contractor has prepared and would implement for all cable installation operations a site-specific Spill Prevention Control and Countermeasures Plan that has been reviewed and approved by the Office of Spill Prevention and Response. Spills caused by a vessel collision are very unlikely because various navigation precautions are required to avoid collisions, including a 1.15-mile (1-nm) separation between the cable laying vessel and other vessels (see Section 4.7.2). Thus, this impact would be adverse but not significant (Class III).

Table 4.6-1. Summary of Marine Water and Sediment Quality and Oceanography Impacts and Mitigation Measures

Impact	Mitigation Measures
MAR-1: Cable installation, removal, and repair operations would resuspend bottom sediments near the cable route. (Class III)	None required.
MAR-2: HDD operations would degrade nearshore water and sediment quality. (Class III)	None required.
MAR-3: Fuel or hydraulic fluid spills from cable installation vessels would degrade water quality. (Class III)	None required.

4.6.5 Cumulative Impacts

All cumulative projects could contribute to cumulative impacts on marine water and sediment quality. Each of these projects would cause temporary and localized impacts on marine water and sediment quality in Monterey Bay or Moss Landing Harbor. The IODP Borehole Observatories, Pier Replacement Projects, and dredged disposal operations at the SF-12 disposal site would likely cause short-term and localized disturbances to bottom sediments, resulting in temporary increases in suspended sediment concentrations and turbidity levels. The Parks Repair Projects could cause temporary and localized erosion of beach sands into nearshore areas of the Bay. However, these impacts would not be affected by the proposed Project because HDD would minimize the potential for erosion of beach sands. The Harbor Redevelopment Project will release dredged sediments onto local beaches and/or at a disposal site within Monterey Bay that will result in temporary and localized increases in suspended sediment concentrations and turbidity. Persistent reductions in dissolved oxygen concentrations, or appreciable increases in concentrations of metal or organic contaminants, are unlikely due to rapid mixing and dispersal by nearshore waters. The Coastal Water Project would generate 24 mgd of brine wastes that would be discharged into Monterey Bay. These effluents would mix rapidly with the receiving waters, and the discharge, when combined with the effects of the proposed Project, is not expected to degrade water quality. Cumulative impacts on marine water and sediment quality and oceanography from these projects, combined with the proposed Project, are considered less than significant (Class III).

4.6.6 Alternative Landings

Alternative Landing Area 1: Duke Energy Pipeline to MBARI Property

The impacts on marine water and sediment quality and oceanography from Alternative Landing Area 1 would be the same as the proposed Project. HDD would occur over a shorter distance under this alternative compared to the proposed shore landing operation, resulting in less onshore accumulation of drilled sediments that could be subject to wind and water erosion in the Harbor area. However, this option would require two shore staging areas for installation (one in the North Harbor by Jetty Road and one in the South Harbor by Sandholdt Road), while the proposed landing area requires only one staging area on Sandholdt Road. The additional staging area would result in additional ground disturbance and potential erosion-induced siltation of Moss Landing Harbor, Elkhorn Slough, and the Pacific Ocean. Therefore, potential erosion-induced siltation of adjacent waterways would be slightly greater under this alternative, but still less than significant (Class III).

Alternative Landing Area 2: Moss Landing Marine Laboratories (MLML) Pier

The impacts on marine water and sediment quality and oceanography from Alternative Landing Area 2 would be the same as the proposed Project, with the exception that the potential for impacts on marine water and sediment quality from loss/release of drilling fluids during HDD would be eliminated.

No Project/Action Alternative

The No Project/Action alternative would not alter existing conditions in the project area. Therefore, this alternative would have no impact on marine water and sediment quality or oceanography beyond those occurring during existing operations.